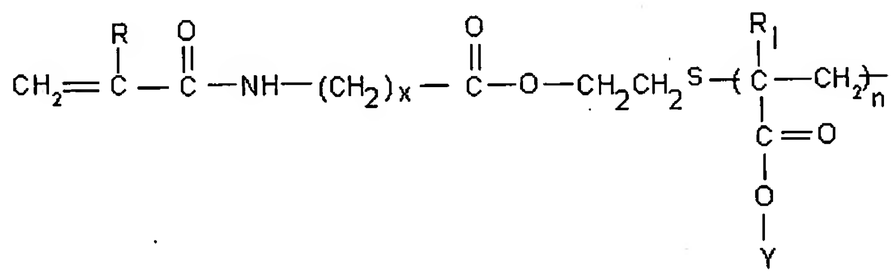
CLAIMS

1. A process for preparation of Polymerizable macromer of molecular weight ranging between 700 Daltons to 1,00,000 Daltons having formula (1)



Formula (1)

wherein,

R is H, CH_3, C_2H_5, C_6H_5,

R_1 is H, CH_3, C_2H_5, C_6H_5

X is in the range of 4 to 10 and value′on n is in the range of 2 to 50,

Y is *N*-Acetyl Glucosamine(NAG), mannose, galactose, sialic acid, fructose, ribulose, erythrolose, xylulose, psicose, sorbose, tagatose, glucopyranose, fructofuranose, deoxyribose, galactosamine, sucrose, lactose, isomaltose, maltose, cellobiose, cellulose and amylase, said process comprising following steps :

a) dissolving a Polymerizable monomer-spacer conjugate in an organic solvent,

b) adding to the solution of step (a) one or more functional oligomer,

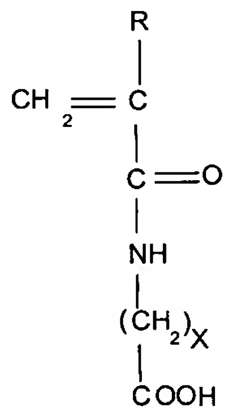
c) adding coupling agent to step (b) reaction mixture to dissolve,

d) allowing to stand the reaction mixture of step (c) at an ambient temperature for 24 hrs to 48 hrs,

e) removing the unreacted coupling agent from step (d) reaction mixture, and

f) precipitating the Polymerizable macromer from step (e) reaction mixture by adding a non solvent.

2. A process as claimed in claim 1 wherein in step (a), the monomer-spacer has general formula formula (5)



Formula (5)

Where in, R is H, CH_3, C_2H_5, C_6H_5, X may be 4 to 10.

3. A process as claimed in claim 1 wherein in step (a), the monomer-spacer conjugate is having a reactive site for bonding exemplified by COOH or NH_2

4. A process as claimed in claim 1 wherein in step (a), the organic solvent is selected from the group consisting of dimethyl formamide, tetra hydro furan or di-methyl sulfoxide used to dissolve the monomer-spacer conjugate and functional oligomer

5. A process as claimed in claim 1 wherein in step (b), the functional oligomer used is selected from polymethacryloyl NAG or polyacryloyl NAG or poly vinyl benzyl NAG.

6. A process as claimed in claim 1 wherein in step (c), the coupling agent used is selected from the group consisting di Cyclohexyl Carbodiimide (DCC), 1-Cyclohexyl 3-(2- Morpholinoethyl) Carbodiimide metho-p-toluenesulfonate (CMC),1-Ethyl-3-(3-Dimethylamino-propyl) Carbodiimide (EDC).

7. A process as claimed in claim 1 wherein in step (c), the molar ratio of coupling agent to functional oligomer used is minimum 1:1 for condensation of polymerizable monomeric spacer conjugate.

8. A process as claimed in claim 1 & 6,wherein the molar ratio of coupling agent to functional oligomer used is in the ratio of 1:1 for condensation of polymerizable monomeric spacer conjugate

9. A process as claimed in claim 1 wherein in step (f), the non solvent used to precipitate the polymerizable macromers is selected from the group consisting of acetone, diethyl ether or hexane.

10. A process as claimed in claim 1 wherein polymerizable macromer along with NAG enhances the binding constant K_b 930 times higher than NAG alone.

11. A process as claimed in claim 1, wherein polymerizable macromer reduce inhibition of lysozyme I_{50} mM more than 27000 times

12. A process as claimed in claim 1, wherein binding (I_{max}) of Polymerizable macromer enhances in the range of 55 to 95.

13. A Polymerizable macromer as obtained by process as claimed in claim 1,wherein comprises multiple ligand.

14. A Polymerizable macromer as obtained by process as claimed in claim 1, wherein multiple ligands contains various carbohydrates including NAG.

15. A Polymerizable macromer as obtained by process as claimed in claim 1, multiple ligand contains NAG are stable, water soluble, resistant to degradation and free from microbial contamination.

16. A Polymerizable macromer as obtained by process as claimed in claim 1, wherein multiple ligand bind simultaneously multiple sites of the enzyme and disease causing virus thereby enhancing inhibitory effect.

17. A Polymerizable macromer as obtained by process as claimed in claim 1, wherein polymerizable macromer containing multiple ligand interact with multiple receptors to enhance the binding of lysozyme or virus and biomolecules and thereby enhancing the inhibition.

18. A Polymerizable macromer as obtained by process as claimed in claim 1, comprises conjugation of the monomeric spacer with polyvalent ligand to provide greater accessibility to the ligand conjugate for binding with receptor molecule.

19. A Polymerizable macromer as obtained by process as claimed in claim 1, copolymerize with the co-monomers and provide copolymers containing polyvalent ligand.

20. A Polymerizable macromer as obtained by process as claimed in claim 1, used in selective separation of biomolecules from solution by virtue of their ability to bind selectively to the substrate.

21. A Polymerizable macromer as obtained by process as claimed in claim 1,wherein the molecular weight of the polymerizable macromer is in the range of 700 Daltons to 1,00,000 Daltons.

22. A Polymerizable macromer as obtained by process as claimed in claim 1, useful for application in medicine and biotechnology.

23. A Polymerizable macromer as obtained by process as claimed in claim 1, used in threapeutical agents, in affinity separations and immunoassays.

24. A Polymerizable macromer as obtained by process as claimed in claim 1, has binding constant value K_b 930 times higher as compared to N-Acetyl Glucosamine.

25. A Polymerizable macromer obtained by process as claimed in claim 1, having inhibition of lysozyme in terms of I_{50}mM more than 27000 times lower as compare to N-Acetyl Glucosamine.

26. A Polymerizable macromer obtained by process as claimed in claim 1, having inhibition of lysozyme in terms of I_{max} 70 times higher as compared to N-Acetyl Glucosamine.